THE PAID-FROM-SAVINGS GUIDE TO GREEN EXISTING BUILDINGS

EXECUTIVE SUMMARY

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Executive Summary

Growing awareness of the built environment's impact on the natural environment, economy, health, and productivity has spurred rapid growth in the green building industry. Green buildings maximize operational efficiencies while minimizing negative environmental and health impacts.

LEED: DEFINING LEADERSHIP FOR NEW AND EXISTING BUILDINGS

In 2000, USGBC established the Leadership in Energy and Environmental Design (LEED) Green Building Rating System™ as a way to assess sustainable achievements for the built environment. LEED certification is available for both new and existing buildings as well as neighborhoods. For new construction projects, owners can design and construct healthy, high-performance buildings right from the start.

Greening existing buildings, on the other hand, may require system upgrades, retrofits, installations, or renovations, as well as the implementation of operations and maintenance (O&M) best practices and sustainable policies. Many owners want to green their existing buildings, but often perceive the needed improvements to be cost prohibitive.

LEVERAGING SAVINGS TO PAY FOR GREEN UPGRADES

The paid-from-savings approach is a financing strategy to green existing buildings. It leverages the savings generated from building system upgrades to pay for a comprehensive greening project within a defined pay-back period. Paid-from-savings projects can use a variety of financing methods including:

- Self-financing,
- tax-exempt lease-purchase agreements for qualifying entities,
- power purchase agreements for renewable energy projects,
- performance contracts for larger projects,
- equipment finance agreements, and
- commercial loans or bond financing for qualifying entities.

In many cases, successful projects employ a combination of these options, along with supplemental funding, such as revolving loan funds, utility rebates, and renewable energy grants, as well as funds from the organization's capital and operating budgets.

Using the paid-from-savings approach allows owners to implement needed repairs and upgrades, achieve reductions in energy and water use, and incorporate other green strategies and technologies in the most cost-effective manner.

This overview provides basic information to help building owners understand the paid-from-savings approach and decide if it is a viable option to green their existing building, including the steps to assess if the building has the potential to achieve LEED certification. Project profiles illustrate the variety of project types suited to this approach.

WHAT IS LEED?

LEED is an internationally recognized certification system that measures how well a building performs using several metrics, including:

- energy savings,
- water efficiency,
- CO_2 emissions reduction,
- improved indoor environmental quality, and
- stewardship of resources.

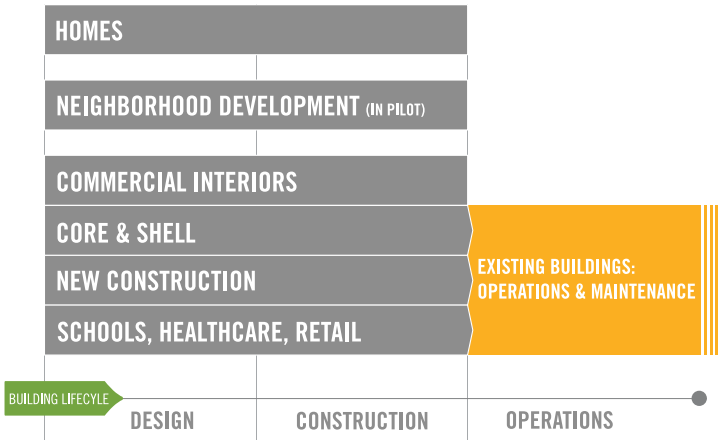
The rating systems provide a concise framework for identifying and implementing practical and measurable green building design, construction, operations, and maintenance solutions.

LEED points are awarded on a 100-point scale, and credits are weighted to reflect their potential environmental impacts. A project must satisfy specific prerequisites and earn a minimum number of points to be certified. Certification levels, based on the number of points, are: Certified, Silver, Gold, and Platinum.

LEED for Existing Buildings: Operations & Maintenance

The LEED for Existing Buildings: Operations & Maintenance rating system is a set of performance standards for the sustainable ongoing operation, maintenance, and retrofit of buildings that are not undergoing major renovations. It addresses high-performance building systems, O&M best practices, and sustainable policies.

LEED Offers a Full Suite of Green Building Rating Systems



The LEED for Existing Buildings: O&M rating system can be applied both to existing buildings seeking LEED certification for the first time and to projects previously certified under LEED for New Construction, Schools, or Core & Shell. It is the only LEED rating system under which buildings are eligible for recertification.

To some degree, all efforts to install high-performance building systems to lower energy and water use and to reduce greenhouse gas emissions will improve a building's environmental performance. The focus of this overview, however, is to assist owners in deciding to use the paid-from-savings approach to seek LEED for Existing Buildings: O&M certification.

Value of LEED

LEED is a smart business decision. As the project profiles illustrate, installing high-performance building systems can yield significant utility cost savings. A LEED-certified building also showcases an owner's commitment to the environment and demonstrates an understanding of how a green work environment improves occupant productivity and health.

Paid-from-Savings Approach to Project Funding

The paid-from-savings approach leverages cost savings generated from building system upgrades to pay for a comprehensive greening project within a defined pay-back period. The cost-saving measures can vary regarding installation costs and pay-back periods. They include such items as:

- replacing the boiler,
- replacing the chiller,
- upgrading lighting systems,
- installing a building automation system (BAS), and
- replacing water fixtures.

Owners can achieve their desired return on investment (ROI) and lessen the overall project pay-back period by "bundling" the longer pay-back measures with the quicker pay-back measures to create a project with a shorter overall pay-back period and a higher ROI.

The Best Candidates for a Paid-from-Savings Approach

In general, the best candidates for the paid-from-savings approach are buildings with inefficient or outdated building systems in which upgrades will generate significant cost savings. To achieve LEED for Existing Buildings: O&M certification, these systems must also meet energy-efficiency and performance-period requirements designated in the rating system. LEED for Existing Buildings: O&M certified buildings also implement O&M best practices and sustainable policies. Successful LEED projects require the commitment of the owner to ensure these practices and policies are adopted and maintained.

Performance Contracting as a Project-Delivery Method

The two common methods for delivering a paid-from-savings project are 1) the traditional renovation and retrofit installation process and 2) performance contracting (PC), which is a project-delivery method that includes a financing strategy. Performance contracting is a well-established means of procuring needed building repairs and upgrades. It focuses on building system upgrades that yield utility and other operating cost savings. Among the factors that may influence the selection of the project-delivery method are the size and scope of the project, staff expertise, and cost. Financing can be included in the performance contract or provided by independent third party financial institutions.

ESCO Guarantees the Savings

Under a performance contract, an energy services company (ESCO) acts as the project developer and assumes the technical and performance risk associated with the project, including guaranteeing the cost savings generated from the system upgrades for a specified period of time. If the savings guarantee is not met, the ESCO pays the owner the difference. The guarantee is unique to performance contracting and not typical of other paid-from-savings approaches.

To determine the savings that can be guaranteed, the ESCO will conduct an investment-grade energy audit, which provides the basis for calculating the guarantee and creating the project development plan. The audit also serves as the foundation for developing the measurement and verification (M&V) plan, which outlines the specific methods and calculations to ensure the expected savings are realized.

Comparing Performance Contracting to Green Performance Contracting

Traditional performance contracting will improve a building's environmental performance by installing high-performance building systems that reduce energy and water consumption. Green performance contracting (Green PC) is based on the same project-delivery method as traditional performance contracting, but enhances the process by utilizing the LEED for Existing Buildings: O&M rating system as the criteria for a comprehensive green project. The range of measures in a Green PC project is broader than the utility-system upgrades found in traditional performance contracting. While Green PC is designed to facilitate LEED certification, the ESCO cannot guarantee it, as many of the credits, especially those related to O&M best practices and sustainable policies, fall under the purview of the owner, not the ESCO.

Key Steps of a Paid-from-Savings Project Seeking LEED Certification

The following is a general outline of the steps related to a paid-from-savings project seeking LEED for Existing Buildings: O&M certification. The process is fluid and the timing for completing the steps will vary based on project specifics, such as the building's condition, staff capacity, financing needs and availability, state laws and regulations, and project economics. The steps are a roadmap, providing an overview of the process and the tasks involved.

STEP 1
Understand LEED Requirements

- **Review Minimum Program Requirements (MPRs) for LEED for Existing Buildings: O&M and ensure the building is a viable candidate for LEED for Existing Buildings: O&M certification.**

STEP 2
Project Preparation

- **Form a project team with organizational stakeholders.**
- **Ensure team members are familiar with the LEED for Existing Buildings: O&M rating system and the paid-from-savings approach.**
- **Determine the building's current energy performance rating using the EPA's ENERGY STAR® Portfolio Manager tool.**
- **Evaluate the potential for cost savings using EPA's Cash Flow Opportunity (CFO) Calculator.**

STEP 3
LEED Certification Assessment

- **Conduct the LEED certification assessment to determine if the building will, upon completion of upgrades, meet the nine LEED for Existing Buildings: O&M prerequisites.**

STEP 4
Project Economics Assessment and Financing

- Through an energy and water auditing process and the LEED certification assessment, project measures are identified.
- Owner and the project team can modify the list of project measures to ensure all desired LEED credits are included.
- Determine project financing needs (dollar amount, terms, potential borrowing limitations, etc.) and research options.
- Determine how the building's utility systems will be maintained to ensure savings are continually generated.
- Match the M&V process needed to the level of financial risk.
- Assess any potential cash-flow problems.
- Ensure the identified project measures — including those required for LEED certification — are bundled* to create the desired ROI and simple pay-back period.

STEP 5
Project Implementation

The project-delivery method will define the implementation process.

- For projects using a traditional renovation or retrofit process:
  - Establish M&V procedures to ensure cost savings are realized.
  - Implement building system improvements, O&M best practices and sustainability policies.
  - Manage the LEED documentation process.
- For Green PC projects:
  - Select an ESCO.
  - Negotiate an agreement with the ESCO.
  - Conduct an investment-grade energy audit.
  - Establish an M&V Plan.
  - Finalize the Green PC Agreement.
  - Implement building improvements.
  - Manage the LEED documentation process. ESCO may assist with LEED credit implementation and documentation.

STEP 6
LEED Certification

- Ensure performance period requirements are met. Nearly all LEED for Existing Buildings: O&M prerequisites and credits have a performance-period requirement that begins when all requirements are fully implemented and functioning.
- Manage documentation process using LEED Online.
- Submit LEED certification application to Green Building Certification Institute (GBCI) for review at the end of the performance period.

bundled* **:: In paid-from-savings projects, building system improvements generate utility cost savings. These savings are leveraged to help fund the project. Paid-from-savings projects seeking LEED certification can "bundle" or aggregate the utility cost-saving measures with non cost-saving measures to optimize green opportunities and project economics. When longer pay-back measures are combined with the quicker measures, the project will have a shorter overall pay-back period and higher ROI.

Additional Implementation Steps for Green PC Projects

The following is a general outline of the additional steps related to a paid-from-savings project using Green PC as the project-delivery-method. The steps are a roadmap, providing an overview of the process and the tasks involved.

STEP A Green PC Preparation

- Ensure team members know the fundamentals of performance contracting and the laws and regulations that govern it in the state.
- Conduct a PC mini-audit to assess whether the project meets the criteria for the performance contracting project-delivery method.

STEP B ESCO Partner Selection

- Develop the RFP/Q; indicate the goal of achieving LEED for Existing Buildings: O&M certification.
- Determine the ESCO selection process; require the ESCO to be knowledgeable of the LEED for Existing Buildings: O&M rating system.
- Add the ESCO to the project team when selected.

STEP C Investment-Grade Energy Audit

- Include LEED certification assessment tasks in the audit's scope-of-work.
- Data collected sets the basis for the savings guarantee, project development plan, and M&V plan.

STEP D Project Development Plan

- ESCO identifies proposed project measures as savings opportunities and LEED certification opportunities.
- Final plan will bundle all project measures–including those needed for LEED certification–to ensure the desired ROI and simple pay-back period are realized.

STEP E Measurement & Verification Plan

- Describe the pre- and post-project conditions, based on the energy audit, and how these conditions will generate savings.
- Describe how actual savings will be verified.
- Owner and the ESCO agree on how the adjusted baseline will be calculated.

STEP F Green PC Agreement

- Modify traditional performance contract language to include details on efforts to seek LEED certification.
- Outline the responsibilities of the ESCO and those of the owner.

Summary

The LEED for Existing Buildings: O&M rating system contains clearly defined performance targets, yet, as the project profiles illustrate, the path to implementation can be flexible. Owners can develop a financing package using the cost savings from system upgrades, along with a host of other options, including rebates, grants, revolving loan funds, tax credits/incentives, and equipment lease agreements.

The paid-from-savings project illustrated in the chart below has been simplified to help demonstrate how project measures are bundled to reach a desired ROI and simple pay-back period. Most projects will have a more complex financial analysis that encompasses the costs and potential savings from all credits pursued for LEED certification, including any recurring operating costs associated with efforts to ensure recertification.

Green Performance Measures for Existing Buildings (LEED prerequisite/credit)	Capital Budget Costs	Operating Budget		
		Onetime Costs	Annual Costs	Annual Savings
High Performance Building Systems				
Plant Native Plants & Groundcover (SSc5)		$8,250		$400
Install Water Efficient Fixtures (WEp1, WEc2)	$22,000			$2,190
Install Energy Efficiency Improvements (EAp2, EAc1)	$505,473			$70,375
Test & Balance Outside Air Intakes (IEQp1)		$21,250		
O&M Best Practices				
Occupant Commuting Survey (SSc4)		$0	$0	
Develop Landscape Plan &Training (SSc3)		$2,500		
Conduct ASHRAE Level II Audit (EAc2.1)		$17,000		
Implement Low/No-cost Improvements and On-going Cx (EAc2.2, EAc2.3)		$18,500	$1,500	$8,500
Conduct Waste Stream Audit (MRc6)		$6,250		
Conduct IAQ Audit (IEQc1.1)		$8,750		
LEED Assessment & Documentation Services		$25,500		
Sustainable Policies				
Develop Sustainable Purchasing Policy/Program (MRp1)		$3,750	$2,250	$0
Develop Recycling Policy/Program (MRp2, MRc7)		$6,750	$1,000	$2,680
Establish ETS Control Policy (IEQp2)		$0	$0	
TOTALS	**$527,473**	**$118,500**	**$4,750**	**$84,145**
	Total Cost: $645,973		**Net Savings: $79,395**	
ROI	**12.3%**			
PAYBACK	**8.1 Years**			

Green project measures can be tailored to project specifics, such as the condition of the building, state laws and regulations, the skill level of in-house staff, and the project provider's expertise. Using the paid-from-savings approach to green an existing building, owners save on utility costs, improve the building's asset value, help the environment, and create a work environment that improves occupant productivity and health.

Success Stories

Many institutions and corporations have used a paid-from-saving approach to green existing facilities and achieve LEED certification.

The following profiles provide details on successful projects and illustrate the variety of project types suited to the approach, including a convention center, a 100-year-old state capitol building, and a million-square-foot corporate headquarters. A university's innovative revolving loan fund is also included.

- Adobe Systems Headquarters
- California EPA (Cal/EPA)
- Colorado State Capitol Complex
- Dallas Convention Center
- Harvard University's Green Capital Loan Fund (GCLF)
- National Geographic Society Headquarters

Adobe Systems Headquarters
San Jose, CA

Background

Since its founding in 1982, Adobe Systems, Inc. has strived to be an environmentally friendly company. Located in downtown San Jose, CA, Adobe occupies one million square feet of commercial office space. In 2001, the California energy crisis spurred Adobe to review the energy and water efficiency of its headquarters. As a result, the company implemented new building systems, established operations and maintenance best practices, and adopted green policies.

Adobe was awarded LEED for Existing Buildings Platinum Certification for its headquarters complex in 2006, and for two regional headquarters buildings located in San Francisco. Adobe was the first commercial enterprise to achieve a total of four LEED platinum certifications, solidifying its reputation as a leader in promoting environmental stewardship and creating healthy work environments.

Photo courtesy of: William Porter

Green Performance Measures and Cost Savings

Adobe's investment of $2.1 million in energy and environmental retrofits are saving $1.5 million in energy and water costs annually. On a per square foot basis, electricity use has been reduced by 39% and solid waste diverted by 98%.

Green performance measures included upgrading chillers and retrofitting the main supply fans with variable frequency drives. Interior lighting systems were retrofitted, timers on garage exhaust fans and outdoor lighting systems were installed, and sensors were added to monitor carbon monoxide levels. Adobe increased its use of outdoor air and enhanced the overall maintenance of its air systems, resulting in better indoor air quality. The company also implemented a green cleaning program.

Water usage was reduced 38% by installing flow restrictors on all faucets, low-flow shower heads, and waterless urinals. Site irrigation was reduced 76% by planting drought- tolerant landscaping and installing a drip-irrigation system with eT-controllers, which adjust landscape watering automatically according to real-time conditions communicated from local weather stations using wireless technology.

Paid-from-Savings Approach

Adobe used a paid-from-savings approach to finance the implementation of green performance measures. It primarily self-financed the project, however, preceding LEED certification in 2006, Adobe received a total of $389,000 in rebates from various sources, including $350,000 from its local utility for participation in energy efficiency programs. Adobe also received rebates directly from the California Public Utilities Commission and $5,000 from the city of San Jose to fund water conservation measures. These rebates reduced the total cost to Adobe from $2.1 million to $1.7 million. Adobe's paid-from-savings approach yielded a return on investment of 91% with a simple payback period of 1.1 years.

KEY PROJECT FACTS

Project size: 1 million SF
Cost: $1.7 million
Reductions: electricity – 39%
water – 38%
diverted solid waste – 98%
Annual savings: $1.5 million
Simple payback period: 1.1 years

LEED for Existing Buildings Platinum.

California EPA
Sacramento, CA

Background

In 2004, the California Environmental Protection Agency's (Cal/EPA) Joe Serna Jr. Building was the first building to receive Platinum LEED for Existing Buildings Certification. Located in downtown Sacramento, Cal/EPA occupies the largest high-rise building in the city with 25 stories and 950,000 square feet. Cal/EPA's pioneering efforts to be the first to achieve LEED Platinum certification demonstrates the agency's commitment to its mission to protect and restore California's natural resources.

Photo courtesy of: Walter Drane

Green Performance Measures and Cost Savings

Green performance measures included the installation of highly efficient HVAC and lighting systems, photovoltaic rooftop panels, and low-mercury lighting tubes with perimeter light sensors to automatically dim lights when natural sunlight is sufficient. As a result of these efforts and others, the Cal/EPA building consumes 60% less energy per square foot than other high-rise buildings in its district and boasts an ENERGY STAR® rating of 99 out of a possible 100 points. After an initial investment of $3.5 million in green performance measures, the annual savings are $1.6 million.

Operating costs have been lowered dramatically through reduced water usage and waste disposal. Low-flow toilets, waterless urinals, and water-efficient fixtures have decreased exterior water use by 50% and interior water use by 20%. Use of a vermicomposting system diverts more than 10 tons of waste from landfills a year, saving $10,000 annually. This unique system uses 20,000 to 30,000 red wiggler worms to devour Cal/EPA's café food prep waste. In addition, requiring re-usable cloth garbage bags, instead of garbage can liners, saves tens of thousands of dollars a year.

KEY PROJECT FACTS

Project size: 950,000 SF; 25 floors
Cost: $3.5 million
Reductions: exterior water use – 50%
interior water use – 20%
Annual savings: $1.6 million
Simple payback period: 2.2 years

LEED for Existing Buildings Platinum.

Performance Contracting

In addition to the green performance measures described above, Cal/EPA entered a performance contract with an energy services company to implement a groundwater project. A new filtration system significantly reduces the minerals in the water, increasing the efficiency of the cooling system and decreasing municipal water use and electricity needed to pump water to the building. If monthly savings do not meet the guarantee, the energy services company pays Cal/EPA the difference. The project was implemented at zero additional cost to taxpayers.

Colorado State Capitol
Denver, CO

Background

Built in 1895, the Colorado State Capitol may not appear to be a likely candidate for LEED certification, but its success proves historic buildings can be models of sustainability.

In 2008 the Capitol building achieved LEED for Existing Buildings: Operations & Maintenance certification during a comprehensive greening of the 20 buildings within the Capitol complex.

Photo courtesy of: Colorado Governor's Energy Office

Green Performance Measures and Cost Savings

Green performance measures across the complex included modifying the chilled water system, replacing the cooling tower, and installing energy-efficient chillers, irrigation controls, and low-flow toilets. Traditional cathode ray tube (CRT) computer screens were replaced by energy saving light-emitting diode (LED) screens, and all computer systems are turned off at night. As a result of these efforts and others, the complex has reduced energy consumption by 34%. The sustainable policies implemented include a recycling program, a green cleaning policy, use of eco-friendly landscaping products and plans, and an employee education program that encourages staff to conserve energy and resources.

Performance Contracting

The costs to improve the complex were $24 million, including $900,000 to renovate the Capitol building. To finance the Capitol complex project, the state entered a 19-year performance contract with an energy services company. The contract guarantees $1.1 million in annual energy savings from the improvements to the Capitol complex.

In 2005, Colorado began using the criteria outlined in the LEED for Existing Buildings rating system for its state measurement and verification (M&V) process. The M&V process ensures equipment is maintained and the energy and water systems are generating the anticipated cost savings.

KEY PROJECT FACTS

Project size: 1.6 million SF; 20 buildings
Cost: $24 million
Reductions: energy – 34%
Annual savings: $1.1 million
Simple payback period: 21.8 years

Colorado State Capitol
LEED for Existing Buildings:
Operations & Maintenance Certified.

Dallas Convention Center
Dallas, TX

Background

Occupying 2.2 million square feet in the downtown central business district, the Dallas Convention Center (DCC) demonstrates how even the largest of buildings can successfully pursue LEED for Existing Buildings certification using a paid-from-savings approach.

Constructed in 1957, the DCC is composed of 105 meeting rooms, two ballrooms, a 1,740-person theater, a 75 berth truck loading dock and almost a million square feet of exhibit space. Although registered in 2006, the DCC was further inspired by a 2008 city-wide commitment to draw 40% of its energy use from renewable sources. These efforts proved a catalyst for DCC to implement additional green performance measures and seek LEED certification.

Photo courtesy of: Dallas Convention Center

Green Performance Measures and Cost Savings

Green performance measures included building retrofits focused on optimizing performance and minimizing waste. To reduce energy usage, 30-year-old chillers were replaced with new high-efficiency models with variable frequency drives. The DCC also replaced more than 30,000 high-mercury content bulbs with T5 and T8 compact florescent bulbs, which have helped to position the DCC to save 20 million kilowatt hours of electricity per year. Fifty-four solar-thermal collection panels to heat water were installed and power capacitors on five electrical services were added, increasing the power factor efficiency to 95%. By replacing plumbing fixtures with low-flush models and installing a more efficient cooling tower, the DCC reduced water consumption by seven million gallons or 18% annually.

In its pursuit of LEED certification, the DCC has implemented a purchasing policy that requires caterers to use biodegradable cups and plates. The DCC has also committed to recycling 50% of its waste over five years, and has developed an education program to help clients and area hotels develop sustainability policies.

KEY PROJECT FACTS

Project size: 2.2 million SF
Cost: $16 million
Reductions: energy – 35%
water – 18%
Annual savings: $2 million
Simple payback period: 8 years

Currently seeking LEED for Existing Buildings certification.

Performance Contracting

In October 2008, the City of Dallas entered a ten-year performance contract with an energy services company. The ESCO replaced most of the facility's lighting, faucets and flush valves, and the cooling tower. It also installed two high-efficiency chillers and new motors and pumps. Under the performance contract, the ESCO has guaranteed utility savings of $2 million annually and will continue to offer measurement and verification (M&V) services and operational support.

Paid-from-Savings Financing Strategy

In addition to the performance contract, the DCC financed the project through a $16 million loan and funds from its operating budget. The DCC also partnered with an electrical provider who agreed to provide a rebate for electrical efficiencies once the improvements had been monitored and verified over a 12-month period. The DCC's paid-from-savings project had a simple payback period of eight years.

Harvard's Green Campus Loan Fund (GCLF)
Cambridge, MA

Background
Renowned for its academic excellence, Harvard University has also established itself as an institution of environmental excellence. The Green Campus Loan Fund (GCLF), a $12-million revolving loan fund to promote sustainability improvements to Harvard's campus, was created to bridge gaps in the capital and operating budgets. With maximum payback criteria of five or ten years, depending on the loan type, projects funded through the GCLF have averaged a 27% return on investment (ROI), producing over $4 million in savings.

Photo courtesy of: Harvard Office for Sustainability

Green Campus Loan Fund
The GCLF offers a variety of methods to fund proposed greening projects. Applicants may choose a full-cost loan, which covers the entire cost of a project limited to $500,000 per green measure and with a payback period of no more than five years, or an incremental loan, which offers a maximum of $500,000 per green measure for the cost delta between standard efficiency equipment and premium efficiency equipment with an internal rate of return of 9% or higher. GCLF also funds feasibility studies for renewable energy loans and enhanced metering loans.

Rockefeller Hall
Rockefeller Hall is a successful paid-from-savings project funded, in part, by the GCLF. Originally opened in 1971 as a student residence and community center, Rockefeller Hall was a gathering place for Harvard Divinity School students and a refectory prior to its June 2007 renovation. The renovation included green performance measures, such as new lighting controls, CO_2 sensors to manage ventilation, a sun-bouncing white roof to reduce cooling costs, and an energy recovery wheel to save energy by regulating seasonal heat and moisture exchange between indoor and outdoor air.

A gear-driven elevator saves up to 40% in energy costs compared to a typical hydraulic elevator. The renovations are saving $22,000 in energy costs and 75 metric tons of CO_2 annually. The expansive nature of the Rockefeller Hall renovations qualify the project to seek certification under the LEED for New Construction rating system.

KEY PROJECT FACTS

Investment: $12 million revolving loan fund

Return on investment: project average of 27% annually

Loans distributed in first seven years: $11.5 million

Rockefeller Hall is currently seeking LEED for New Construction certification.

National Geographic Society Headquarters
Washington, DC

Background

Established in 1888, the National Geographic Society (NGS) is a world-renowned, non-profit educational and scientific institution. Its headquarters complex is located in Washington, DC, and is comprised of three, inter-connected class A commercial buildings, totaling 840,000 square feet. The oldest was constructed in 1902; the newest in 1984.

The society's goal for seeking LEED certification was to operate facilities that reflected its mission while remaining cost effective. The society's success was acknowledged by receiving the first LEED for Existing Buildings Silver certification in November 2003.

Photo courtesy of: The National Geographic Society

Green Performance Measures and Cost Savings

Green performance measures included replacing chillers and boilers and adding air-handling systems, window film, a white roof, energy-efficient lighting, and an energy management control system. NGS also implemented water conservation measures, including efficient flush valves, and indoor air quality projects such as upgrading the building's management system controls for CO_2 monitoring and improved temperature controls. As a result of the renovations and upgrades, energy consumption is 2.5 million kilowatt hours less than it was in 1996, water usage is down 18%, and waste costs have been reduced by 70%.

NGS also established green practices related to landscaping, site maintenance, construction waste management, snow removal, and pest management. It increased bike storage capacity and implemented policies encouraging telecommuting and the use of hybrid vehicles.

Demonstrating its continued support of sustainability, NGS created a "Go-Green Steering Committee" in 2006, which monitors the company's commitment to green performance and suggests additional sustainability policies and practices. At the committee's recommendation, all computers are now automatically shut off at 10:00 p.m. to conserve electricity. NGS is considering installing light emitting diode (LED) lighting.

Performance Contracting

Project renovations were financed and managed in part through a performance contract with an energy services company. The $1.8 million performance contract included HVAC system improvements tied to a total guaranteed energy savings of 8%.

Paid-from-Savings Financing Strategy

Total project costs were financed through a Washington, D.C. revenue bond, including the $1.8 million performance contract.

KEY PROJECT FACTS

Project size: 3 buildings, 840,000 SF
Cost: $6.5 million
Reductions: energy – 8-11%
waste – 70%
water – 18%
Annual savings: $406,000
Simple payback period: 16 years

LEED for Existing Buildings: Operations & Maintenance Silver.

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